The Academic College At Wingate

מכון וינגייט
WINGATE INSTITUTE

ISRAEL ישראל

סמינר פריודיזציה בספורט

מארחים: המכללה האקדמית בוינגייט, היחידה לספורט הישגי, מכון וינגייט והוועד האולימפי

SAVE THE DATES:

JANUARY 10-11, 2018 כ"ג-כ"ד בטבת, תשע"ח

PERIODIZATION IN SPORT SEMINAR

Hosted by the Academic College at Wingate, The Elite Sport Department, The Wingate Institute and Olympic Committee of Israel

KEYNOTE SPEAKERS מרצים אורחים

Prof. Carlo Castagna, University of Rome Tor Vergata, Rome, Italy

Dr. Genadijus Sokolovas, Global Sport Technology, Inc., Colorado Springs, USA

Planning in Football

Carlo Castagna PhD

UNIVERSITA' degli STUDI di ROMA TOR VERGATA

SETTORE TECNICO FIGC.IT

Laboratorio di Metodologia e Biomeccanica Applicata al Calcio
Coverciano **(Firenze)**

Plan of the Talk

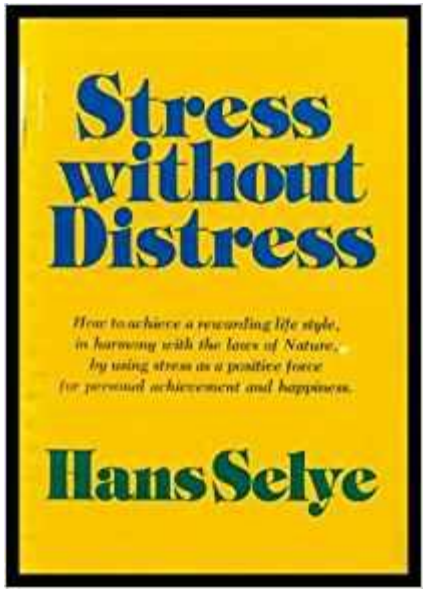
Planning in:

- Football
- Elite Performance
- Youth Soccer
- Future direcions
- Conclusion

Which Football?

- Amateur
- Adult
- Elite
- Youth
- Male
- Female
- Recreational

Periodisation



GSA

Biological-Physiological

PERIODISATION

Stress

- Short Term
- **Long Term**

Adaptations

Load → **Biological-Physiological** → **Response**

Periodisation

REVIEW ARTICLE

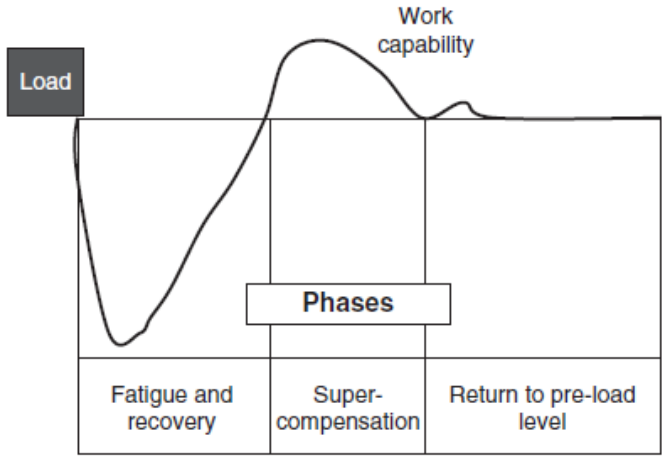
Sports Med 2010; 40 (3): 189-206
0112-1642/10/0003-0189/$49.95/0

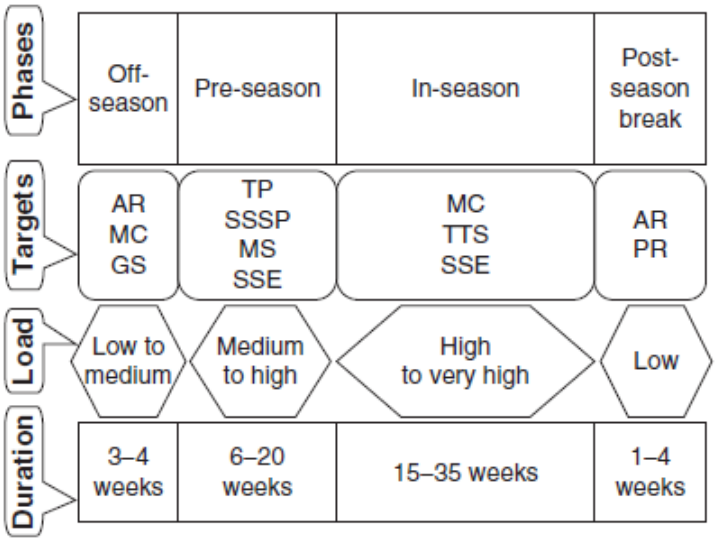
New Horizons for the Methodology and Physiology of Training Periodization

Vladimir B. Issurin

Elite Sport Department, Wingate Institute, Netanya, Israel

Contents





Talking about?

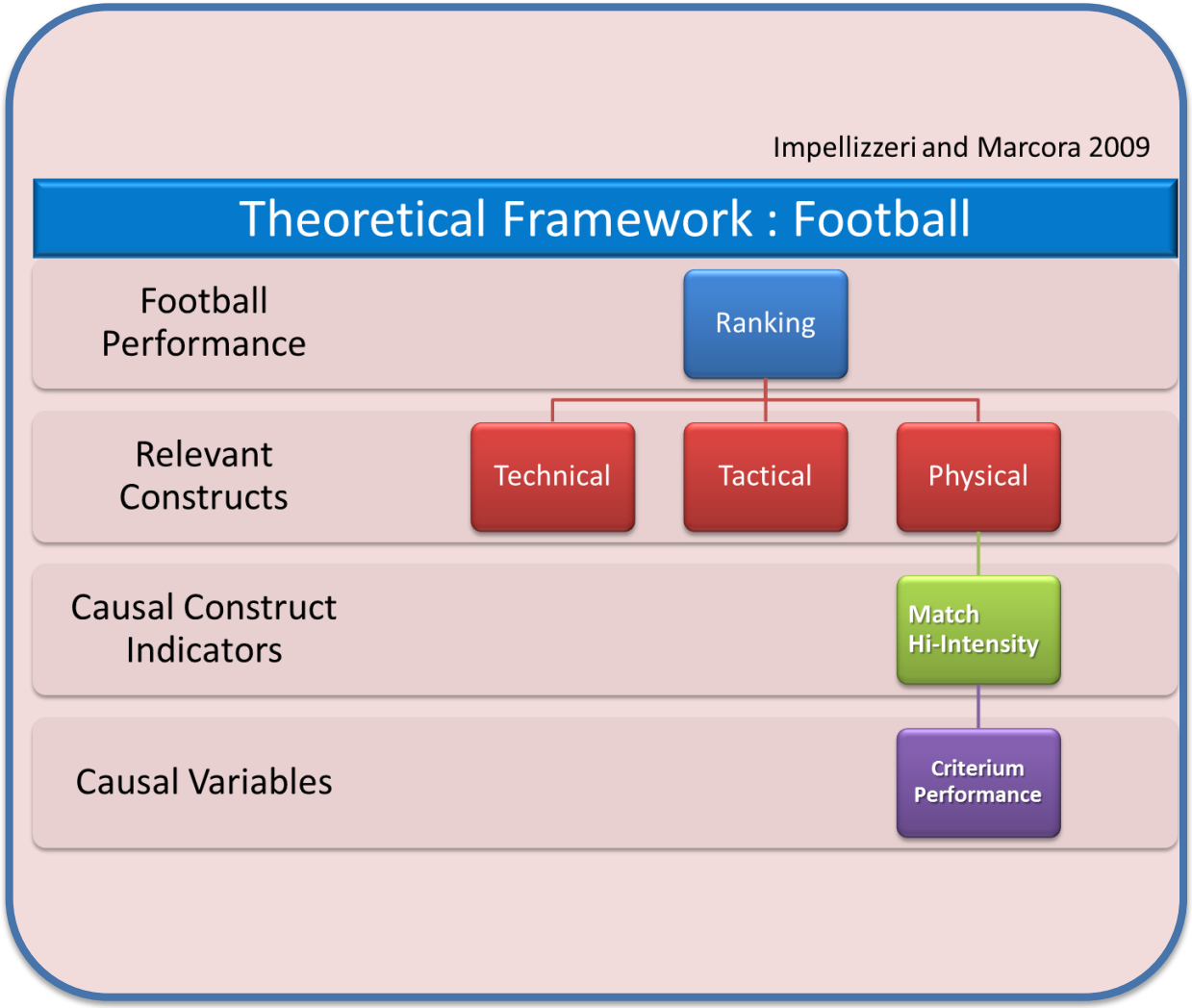
PERIODIZZAZIONE CALCIO

CAMPIONATO

4-8 WEEKS	6-9 MESI	4-6 WEEKS
PRE-AGONISTICO		TRANSIZIONE

Fitness for Football: Constructs

Impellizzeri and Marcora 2009



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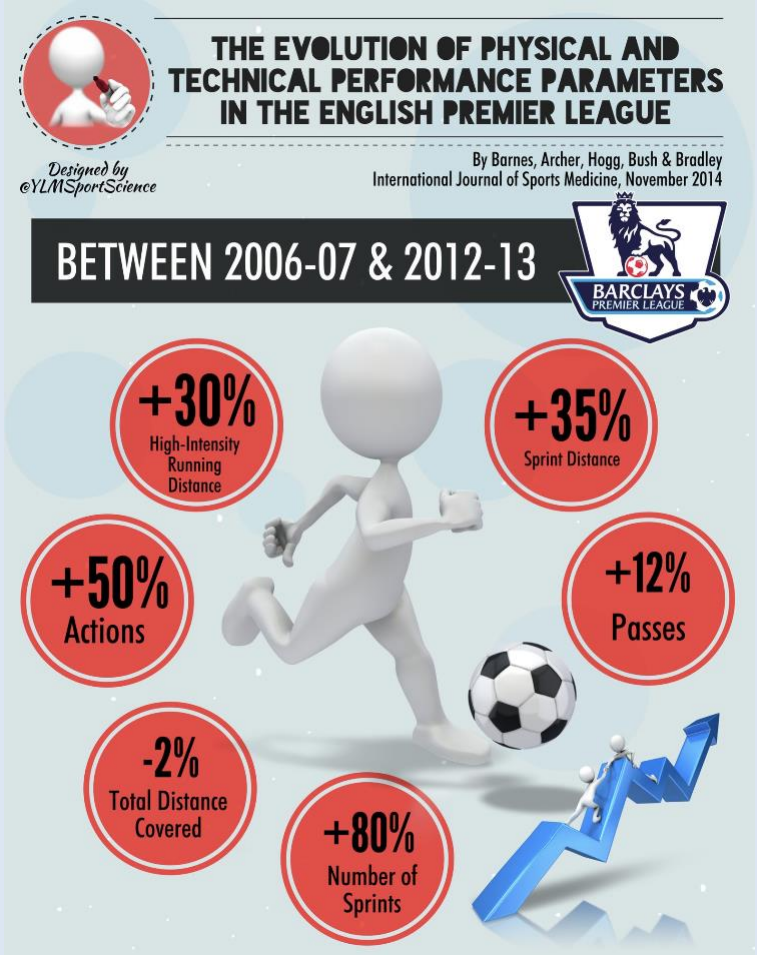

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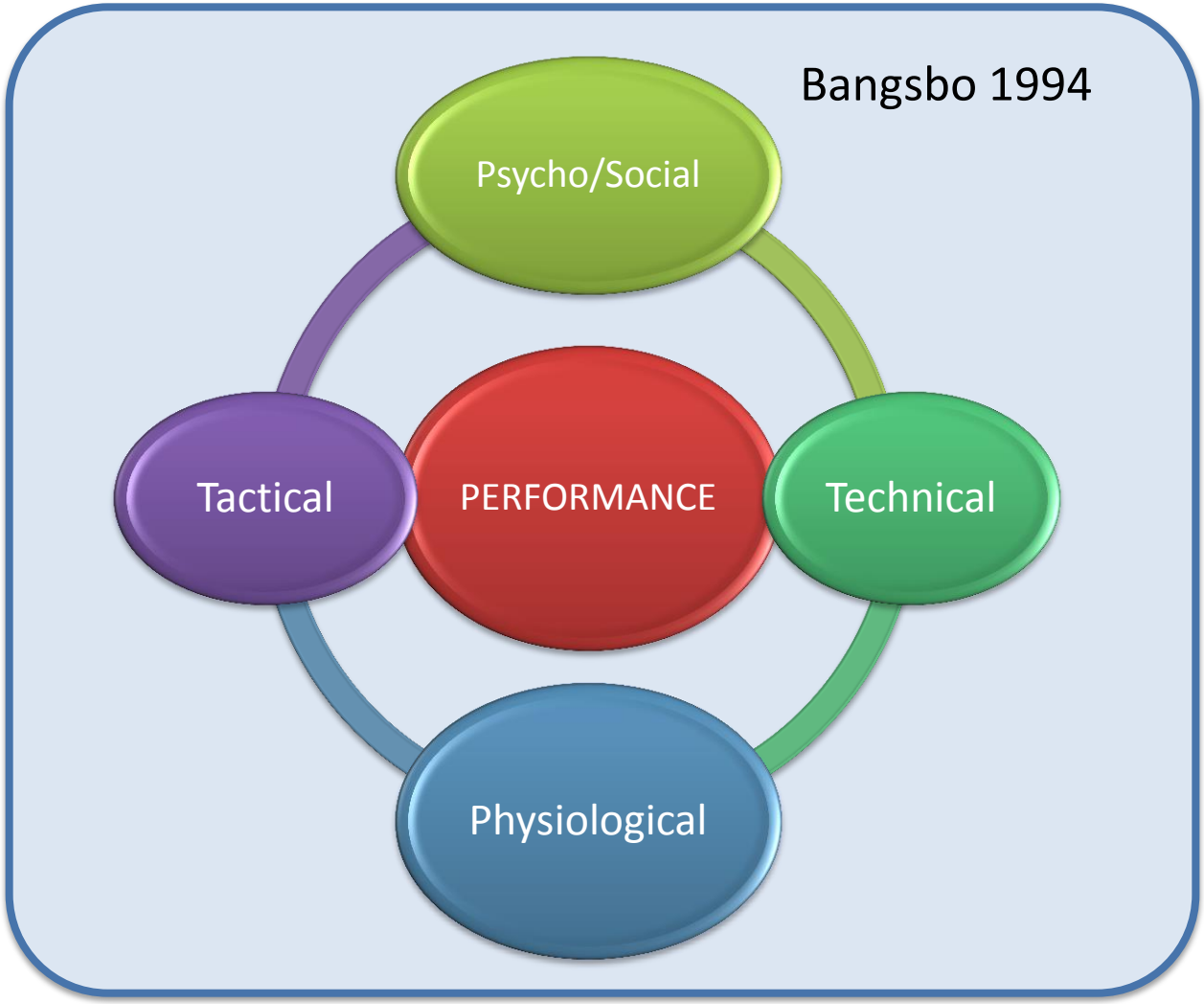


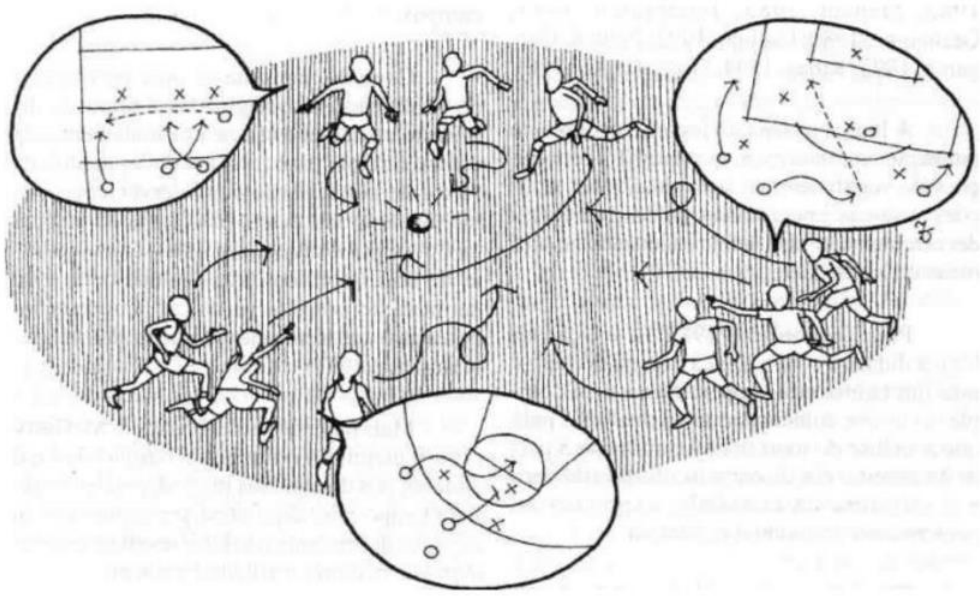
Football–Specificity

Operational Construct:

"What helps to achieve the Supposed football relevant aim… using mainly match related drills"

Football Functional-Training

Tactical Periodisation



J. Garganta

Vìtor Frade

Tactical Periodisation

ibe search jobs dating more International edition

theguardian

By José Mourinho,
"**The Guardian** on-line
20th February 2017

"Our **daily concerns** are directed to make operational our **game model**. However, the structure of the training session and what to do **each day is not only** related to the **tactical objectives** but **also** with **physical fitness** to be prioritised."

Tactical Periodisation

ibe search jobs dating more International edition

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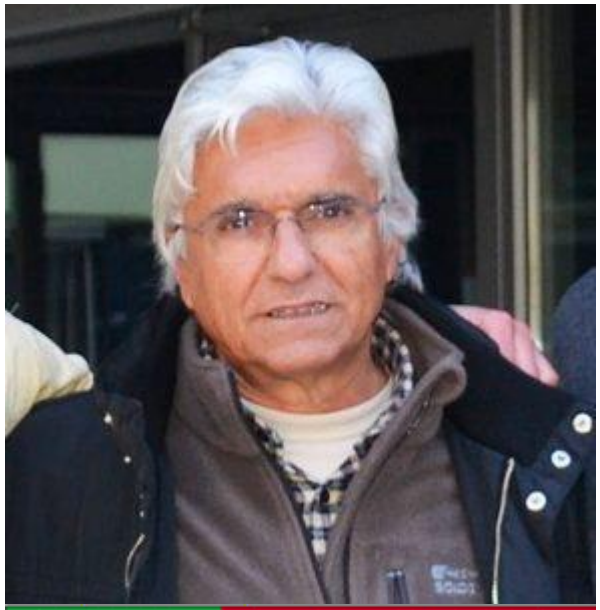


STRATEGIC PERIODISATION

"Intentional peaking for matches or events of perceived greatest priority or difficulty throughout a competitive season"
(Robertson & Joyce, 2015).

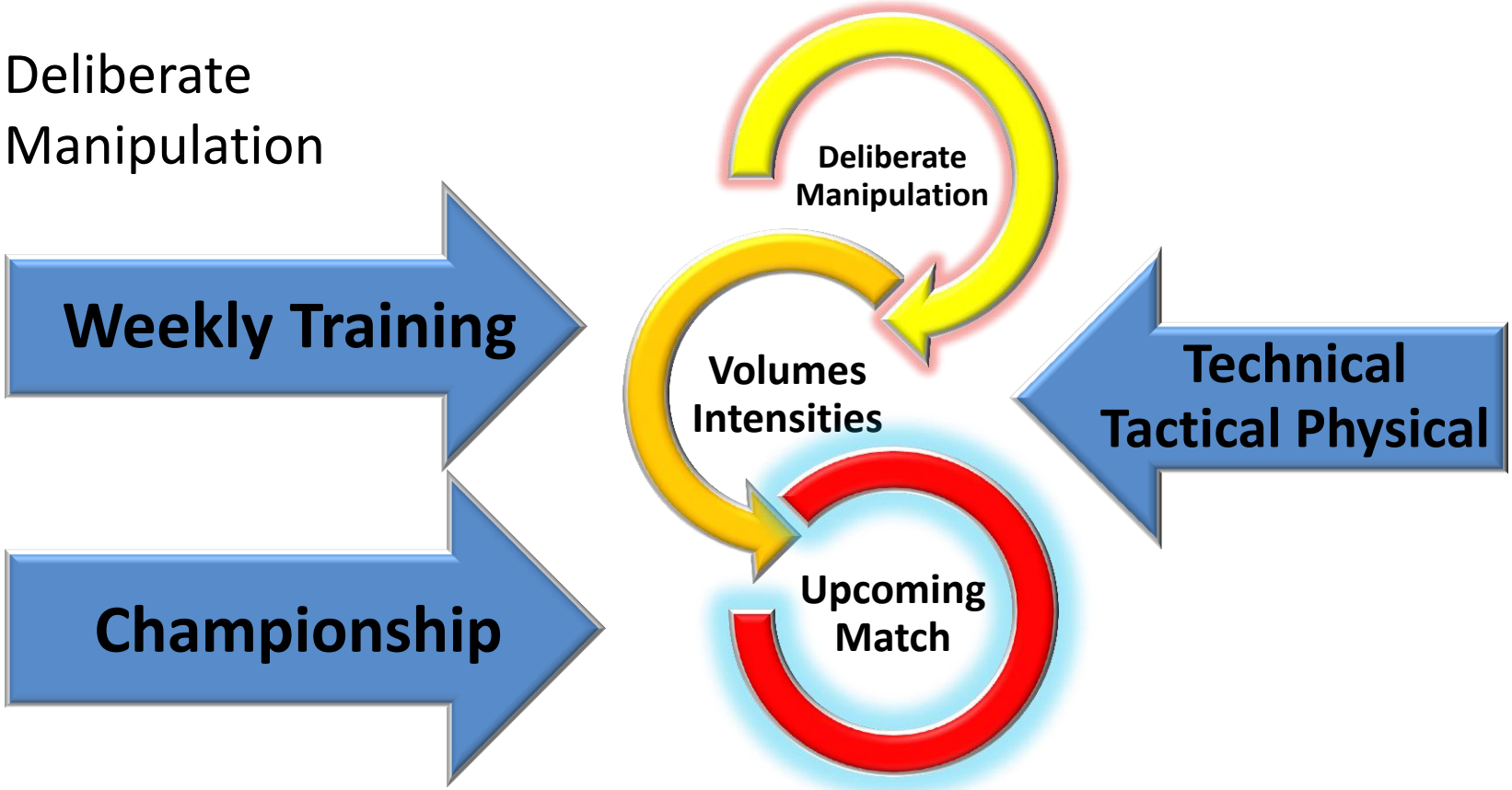
- **Match Difficulty Index**

  Fixed – Dynamic Factors

Tactical Periodisation

- **STRATEGIC PERIODISATION**

Deliberate
Manipulation



Robertson & Joyce 2018

Strategic Periodisation

Match Difficulty

- Opposition rank previous year
- Match Location (home)

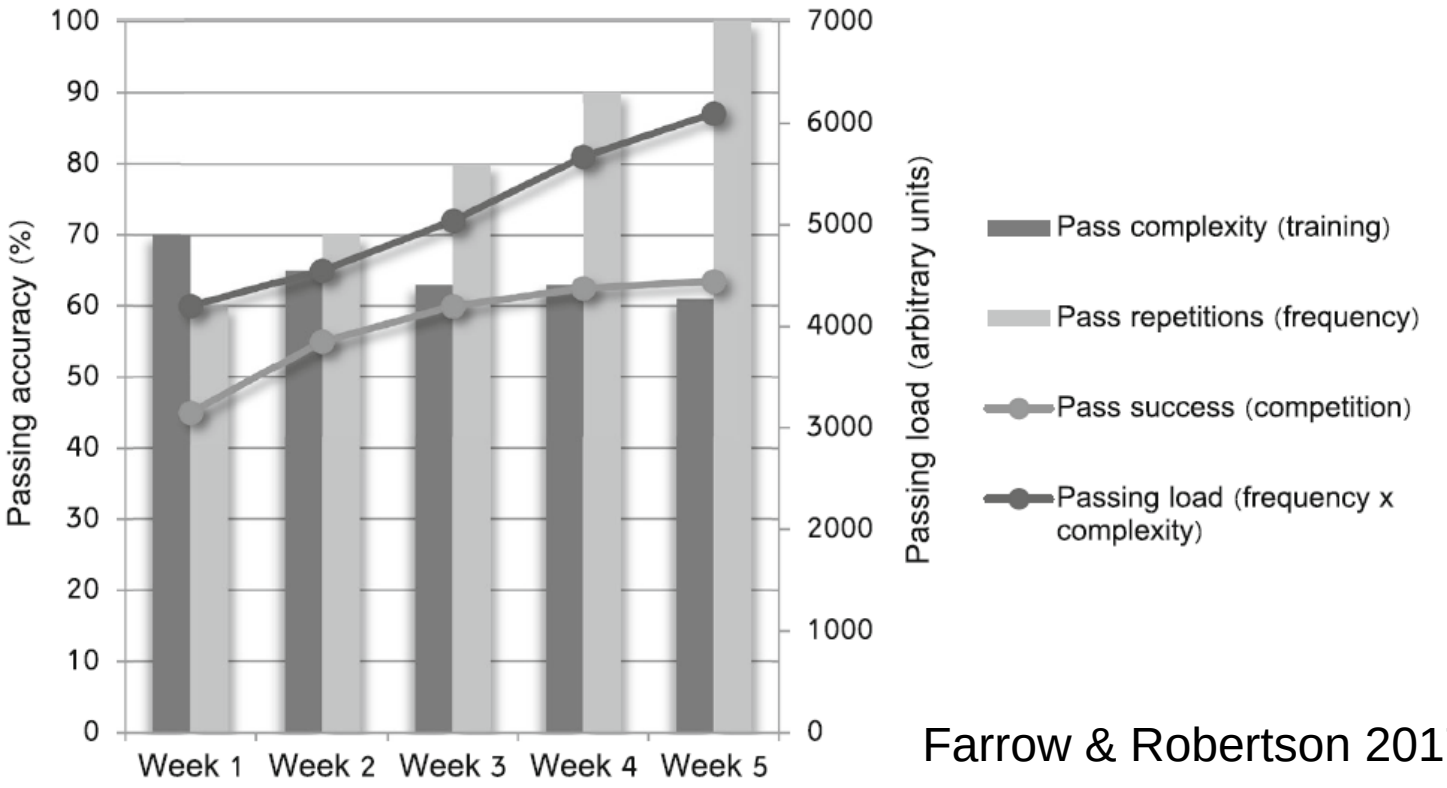
Fixed

- Between Match break
- Opposition Rank currently
- Team Form
- Difference in ladder position
- Team changes previous or k-week
- Number of first year players

Dynamic

Strategic Periodisation

Skill Training Progression



Farrow & Robertson 2017

Fatigue in Football

ARE THE PLAYERS REALLY EXPERIENCING FATIGUE?

Parameters	Performance Level	Outcome	References
Running Sprinting distance last 15 period gam	1er League UK ♂ Elite ♀ Elite Profe l ♂ Pro ♂	↘ 25-50%	Bradley 2009 Krustrup 2005 Krustrup 2010 Mohr 2003 Mohr 2010
Sprint & Performa	E E E fe l ♂ h- e ♂	%	Andersson 2008 Krustrup 2005 Krustrup 2010 Mohr 2003 Mohr 2010
Yo-Yo Intermittent Performance	Elite ♀	↘ % %	up 2010
Isometric MVC	Elite ♀ Elite ♂ Young elite ♂	↘ 7-10%	ndersson 2008 Krustrup 2011 Thorlund 2009

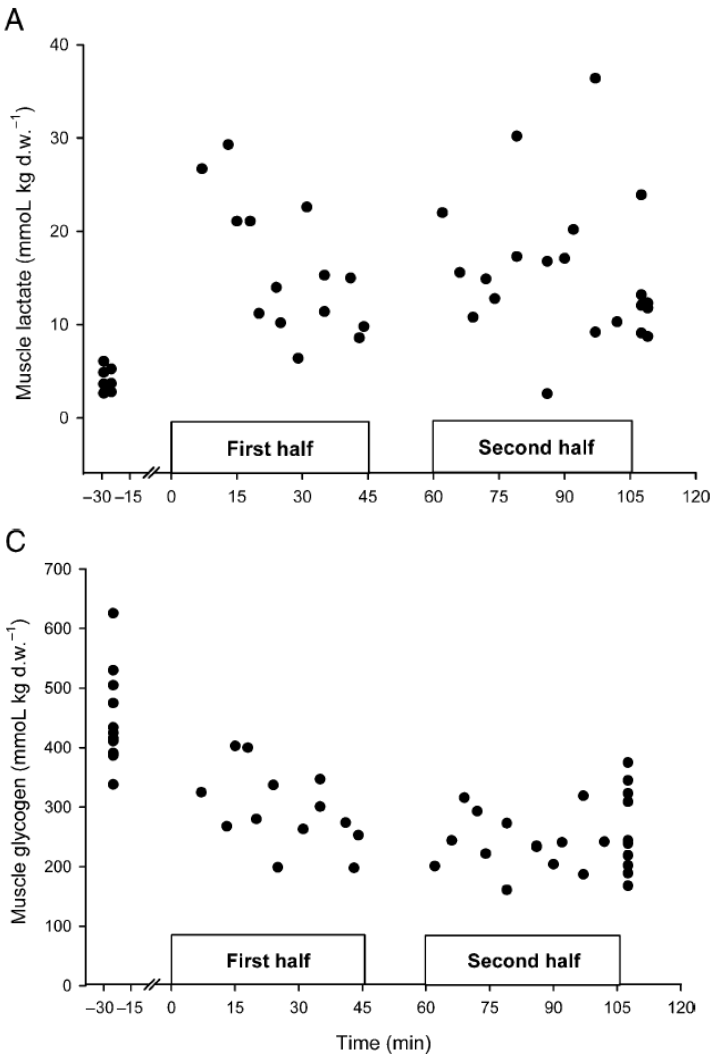
Match Demands: Fatigue

Demands:

- $VO_2 \rightarrow 70\text{-}80\%\ VO_{2max}$
- $HR \rightarrow 80\text{-}90\%\ HR_{max}$
- 150-250 Short Hi/Int

Effects:

- Phos-Creatine →Glycolisis
- ↓40-90% [Glycogen]
- ↑ FFA ↓ pH
- ↑ Glu ↑ IMP



Bangsbo et al. 200

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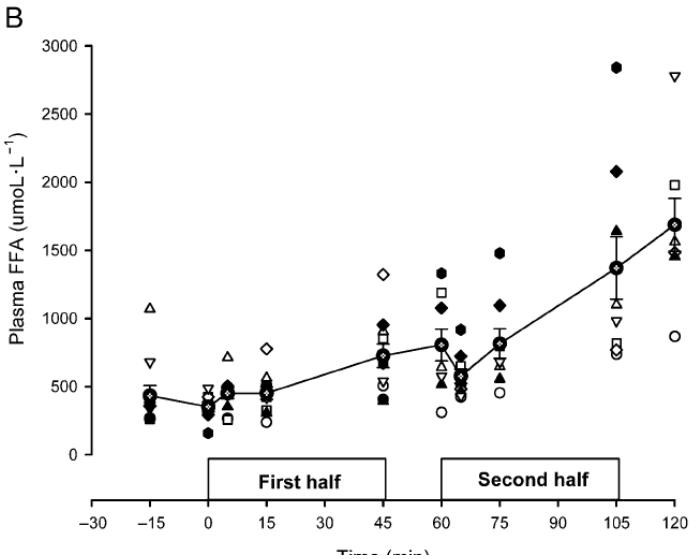
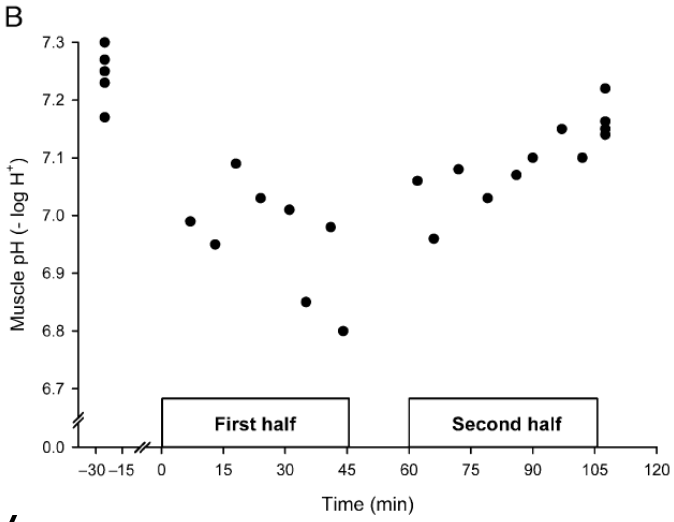


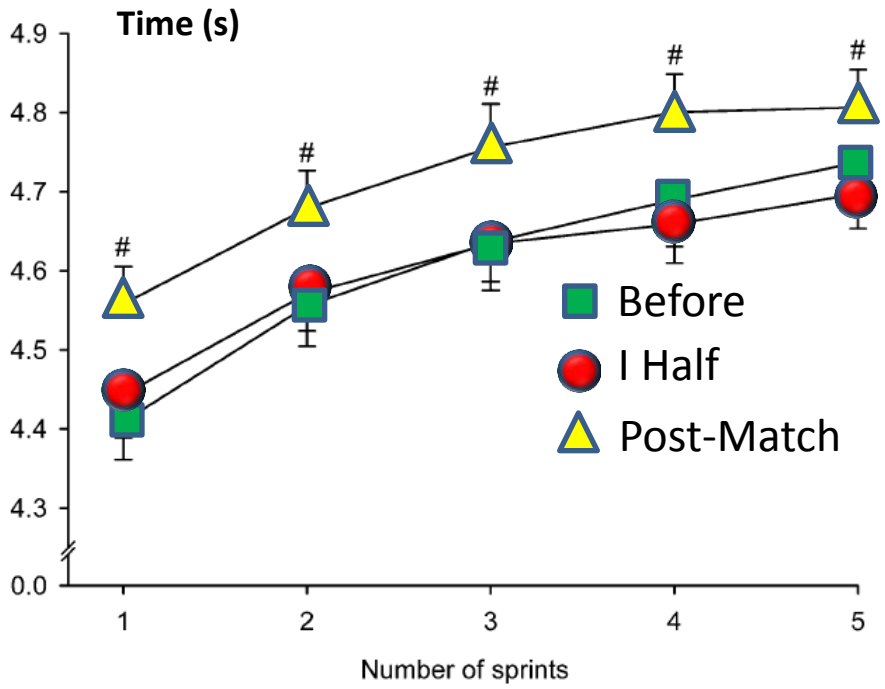


Bangsbo et al. 200?

Match Fatigue Sprinting

5x30m 25s Rec.

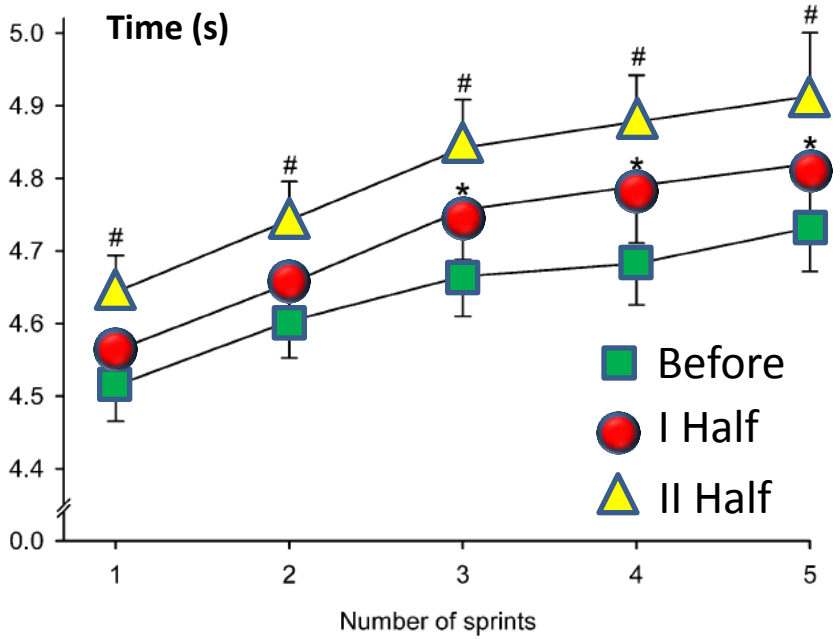
- Before–Interval–Post Match



Krustrup et al 2006

5x30m 25s Rec.

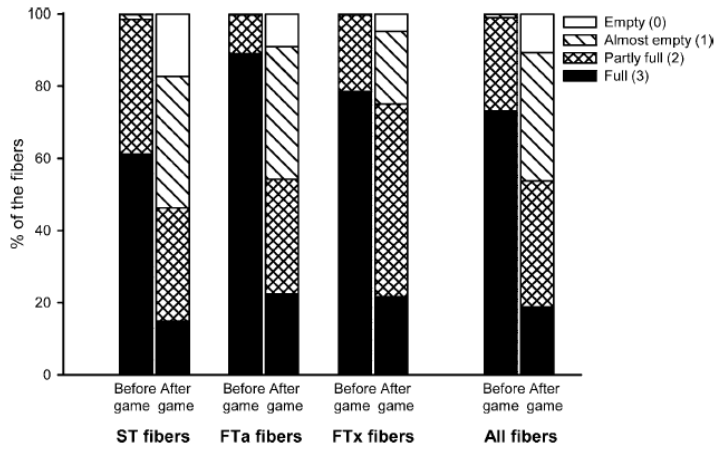
- After Match High-Intensity Phases



Match Fatigue «*Constructs*»

Fatigue:

- **TEMPORARY** → ATP-CP → **First Half**
- **CUMULATIVE** → $[Gly]_m$ → **Second Half**
- **PERSISTENT** → [Gly]m+MD → **Post Match**



Causes:

- **Selective [Gly] Depletion**
- **Fibre FT IIa-IIx**
- **Fibre ST**

Krustrup et al 2006

Performance Constructs

Banister 1975

Performance = Fitness – Fatigue

Key Words; ***Hormesis, Homeostasis, Allostasis, Personalization***

Load= Volume · Intensity

Actions: Training Load Control @ Regulation

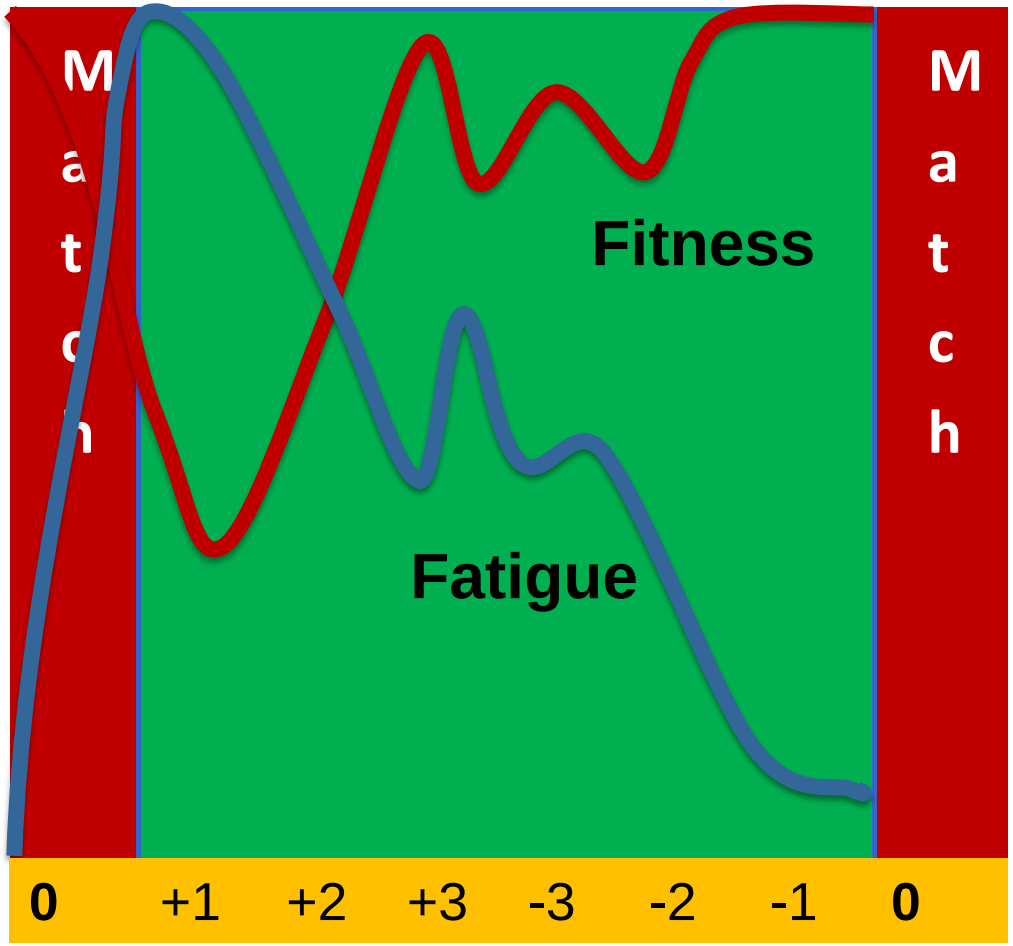
Dose ⟶ Response

HORMESIS

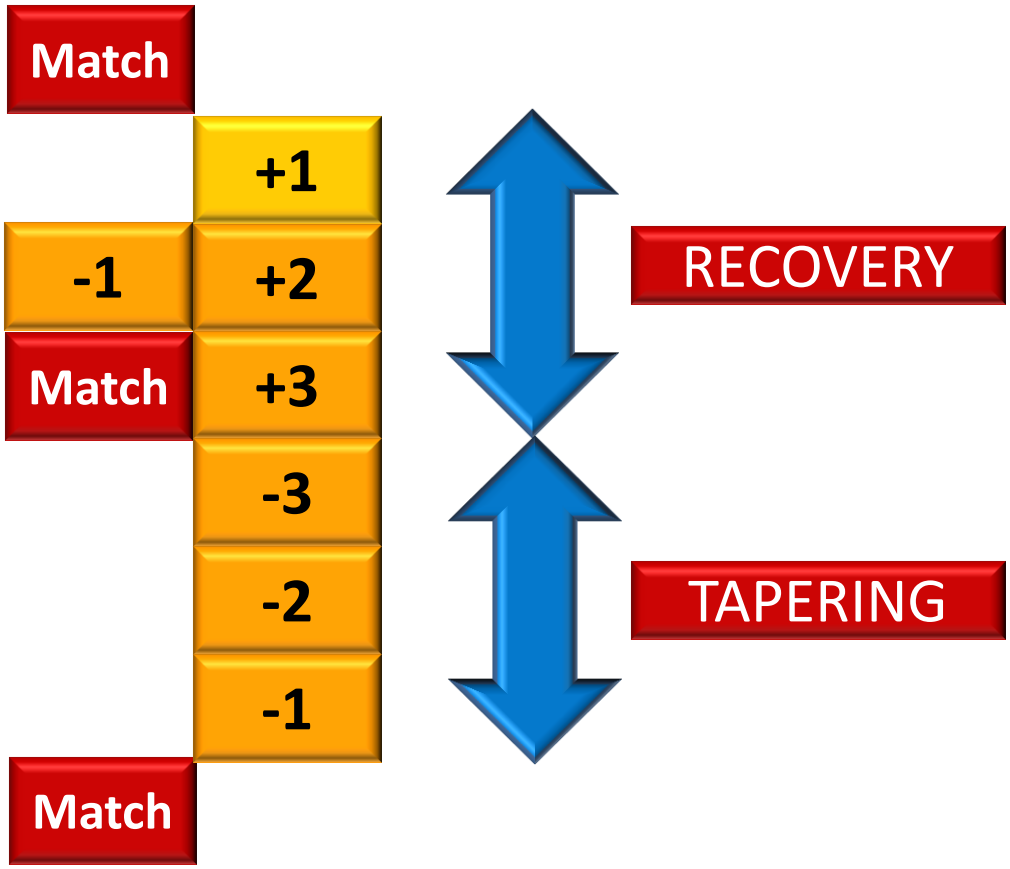
"*All things are poison and nothing is without poison, only the dose permits something not to be poisonous*"

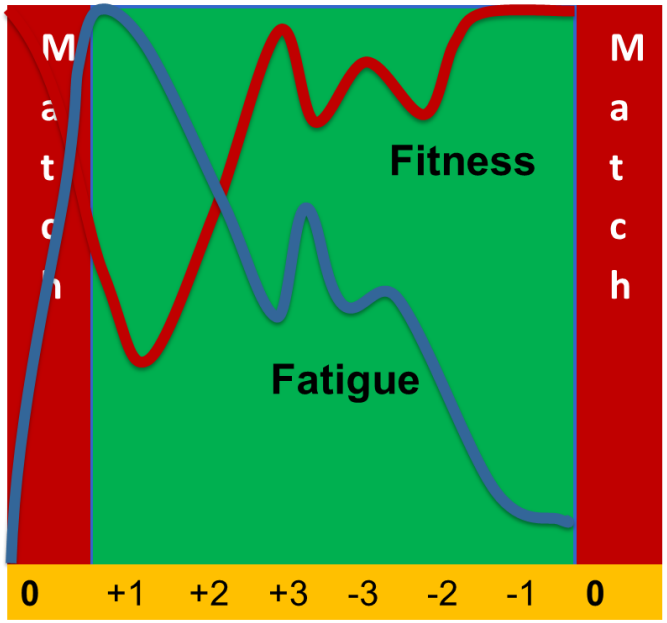
Paracelsus

Weekly Microcycle



Weekly Periodisation





Tactical Periodisation

Sports Med
DOI 10.1007/s40279-017-0798-8

SYSTEMATIC REVIEW

Acute and Residual Soccer Match-Related Fatigue: A Systematic Review and Meta-analysis

J. R. Silva[1,2] · M. C. Rumpf[1,3] · M. Hertzog[1] · C. Castagna[4] · A. Farooq[5] · O. Girard[5,6] · K. Hader[1,7]

Abstract
Background Understanding soccer players' match-related fatigue and recovery profiles likely helps with developing conditioning programs that increase team performance and reduce injuries and illnesses. In order to improve match recovery (the return-to-play process and ergogenic interventions) it is also pivotal to determine if match simulation protocols and actual match-play lead to similar responses. *Objectives* (1) To thoroughly describe the development of fatigue during actual soccer match play and its recovery time course in terms of physiological, neuromuscular, technical, biochemical and perceptual responses, and (2) to determine similarities of recovery responses between actual competition (11 vs. 11) and match simulations. *Methods* A first screening phase consisted of a systematic search on PubMed (MEDLINE) and SportDiscus databases until March 2016. Inclusion criteria were: longitudinal study with soccer players; match or validated protocol; duration > 45 min; and published in English. *Results* A total of 77 eligible studies ($n = 1105$) were used to compute 1196 effect sizes (ES). Half-time assessments revealed small to large alterations in immunological parameters (e.g. leukocytes, ES = 1.9), a moderate decrement in insulin concentration (ES = − 0.9) and a small to

Key Points

Specific physical performance capabilities (e.g. sprint recovered at G + 72 h vs. jumping abilities still impaired at G + 72 h) likely present distinct recovery profiles, resulting in player physical performance impairments at 72 h post-match.

Post-match recovery monitoring of hamstring muscle function (eccentric and/or isometric muscle action), countermovement jump performance, DOMS and CK is of primary importance due to more profound changes (larger magnitude and extended time-course).

Medical staff and researchers should use biochemical (e.g. CK) and perceptual (DOMS) indices separately, for instance, when evaluating players readiness to return to 'real competition' or assessing the effectiveness of specific interventions (e.g. eccentric training).

Post Match Recovery Timing

Systematic Evidence

Silva et al 2017

24h	• RFD, Line Sprint, MVC, Endurance, RSA, Jump Ability, Flexibility
48h	• COD Performance, Quad Strength • Hamstring Strength, Flexibility, Endurance
72h	• Sprint Performance, Quad Strength • Jumping Abilities, MVC
96h	• Full Recovery

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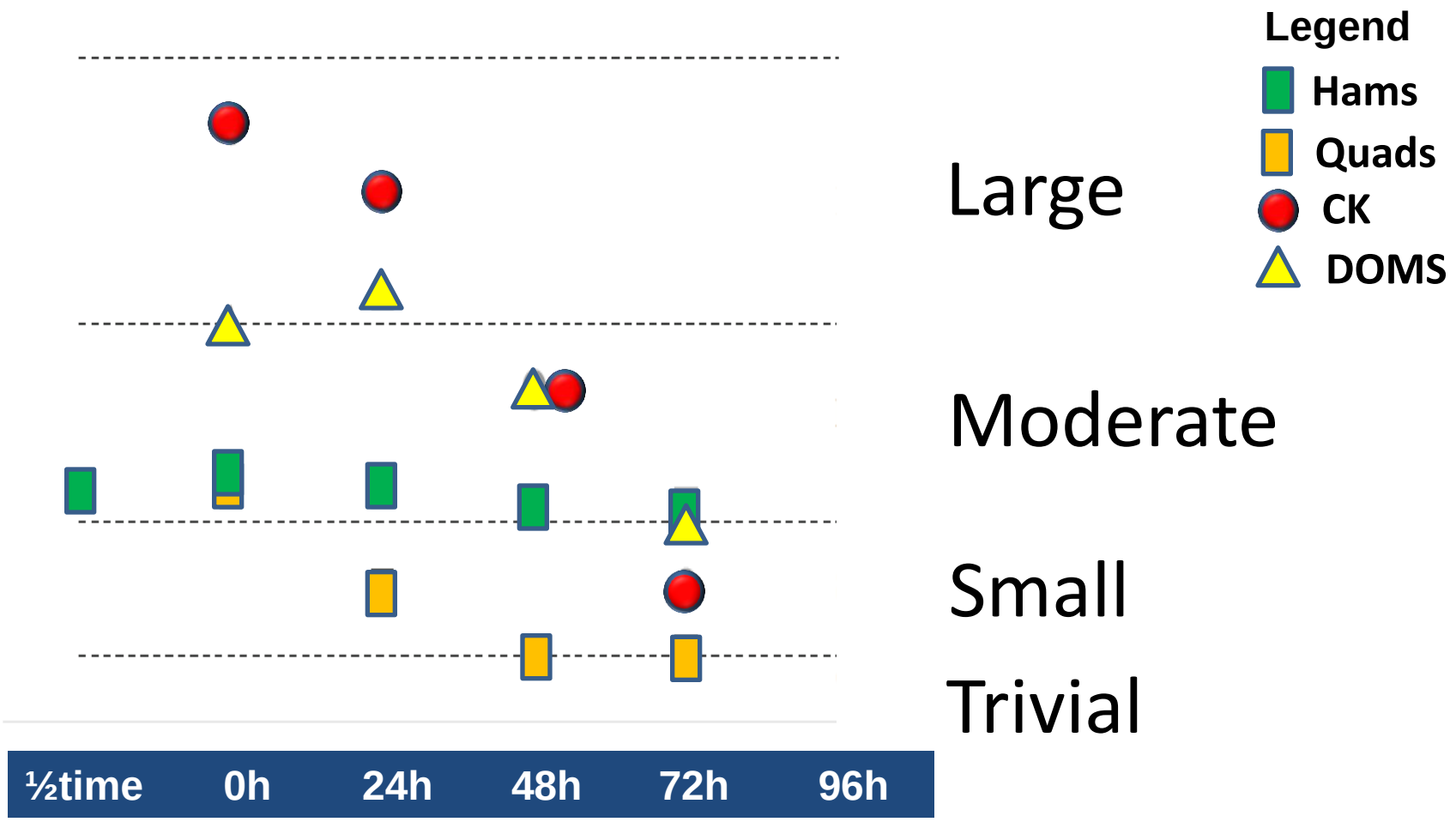
Magnitude of Recovery

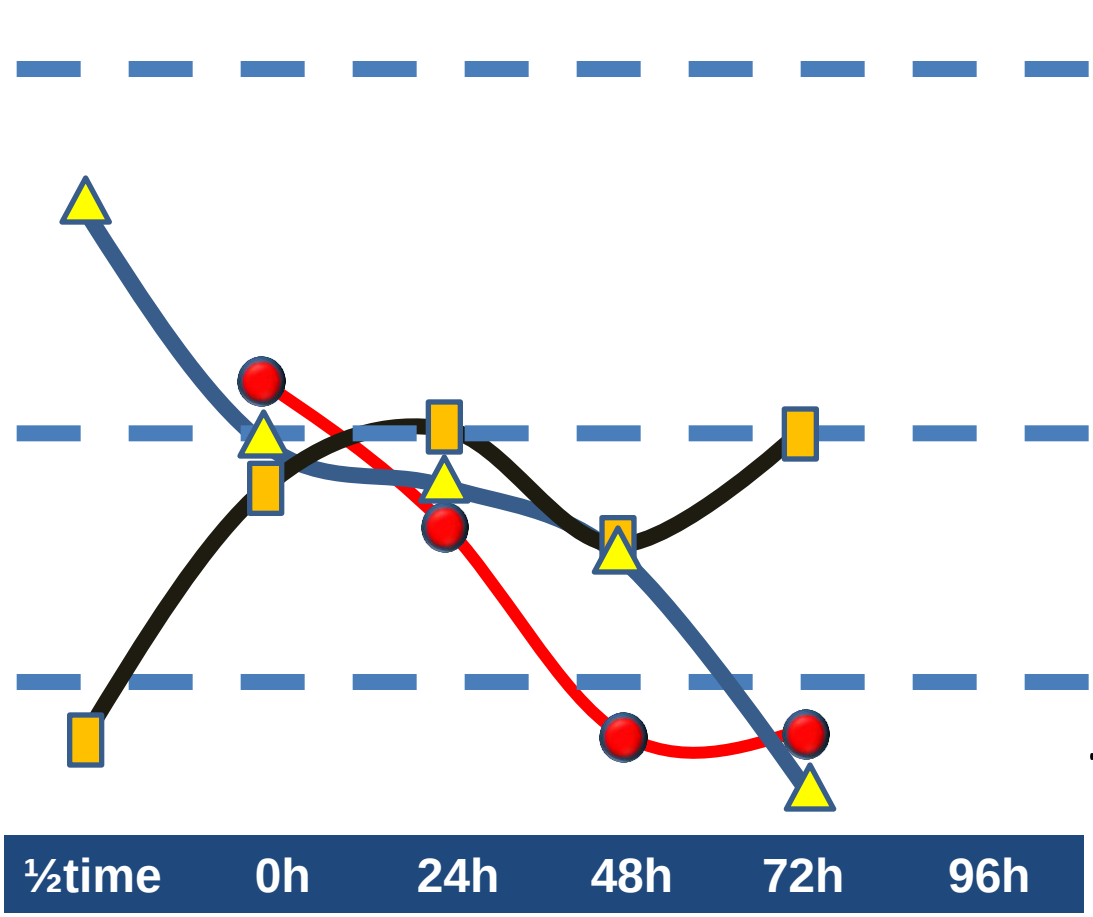
- 24h Small
- 48h Moderate
- 72h Large
- 96h Complete

Silva et al 2017

Match Fatigue



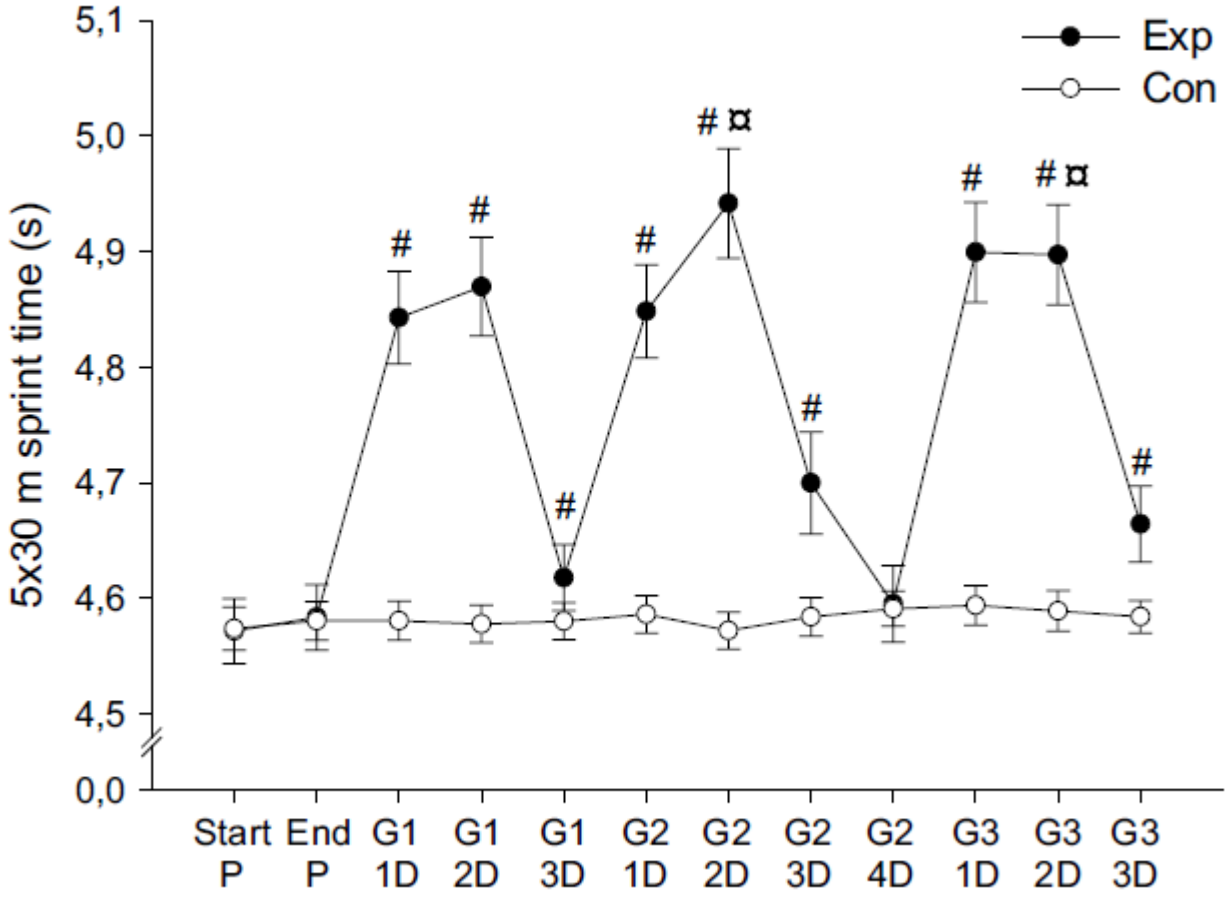
Match Fatigue



Legend

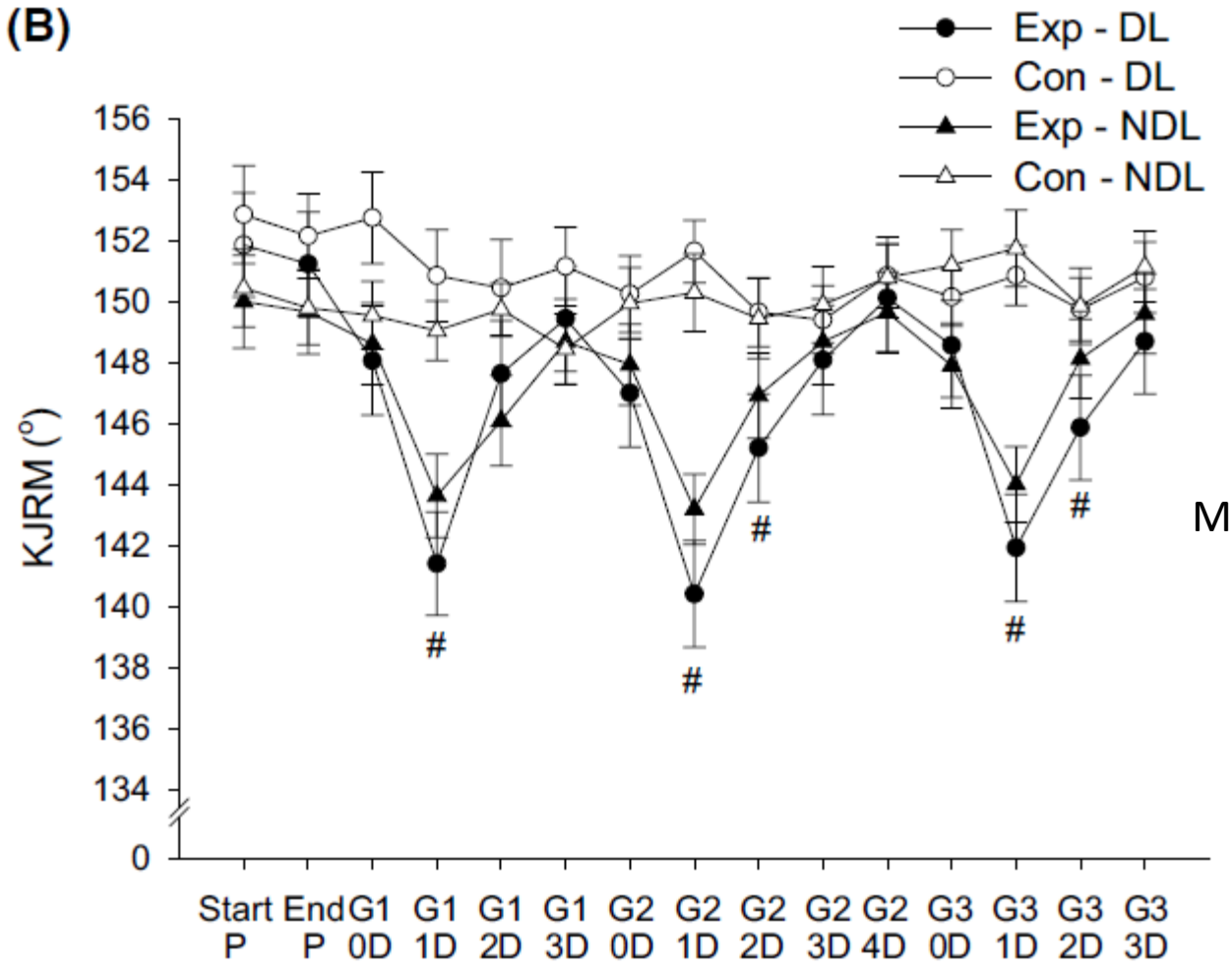
- CMJ
- COD
- Line Sprint

Tactical Periodisation



Mohr et al 2015

Tactical Periodisation



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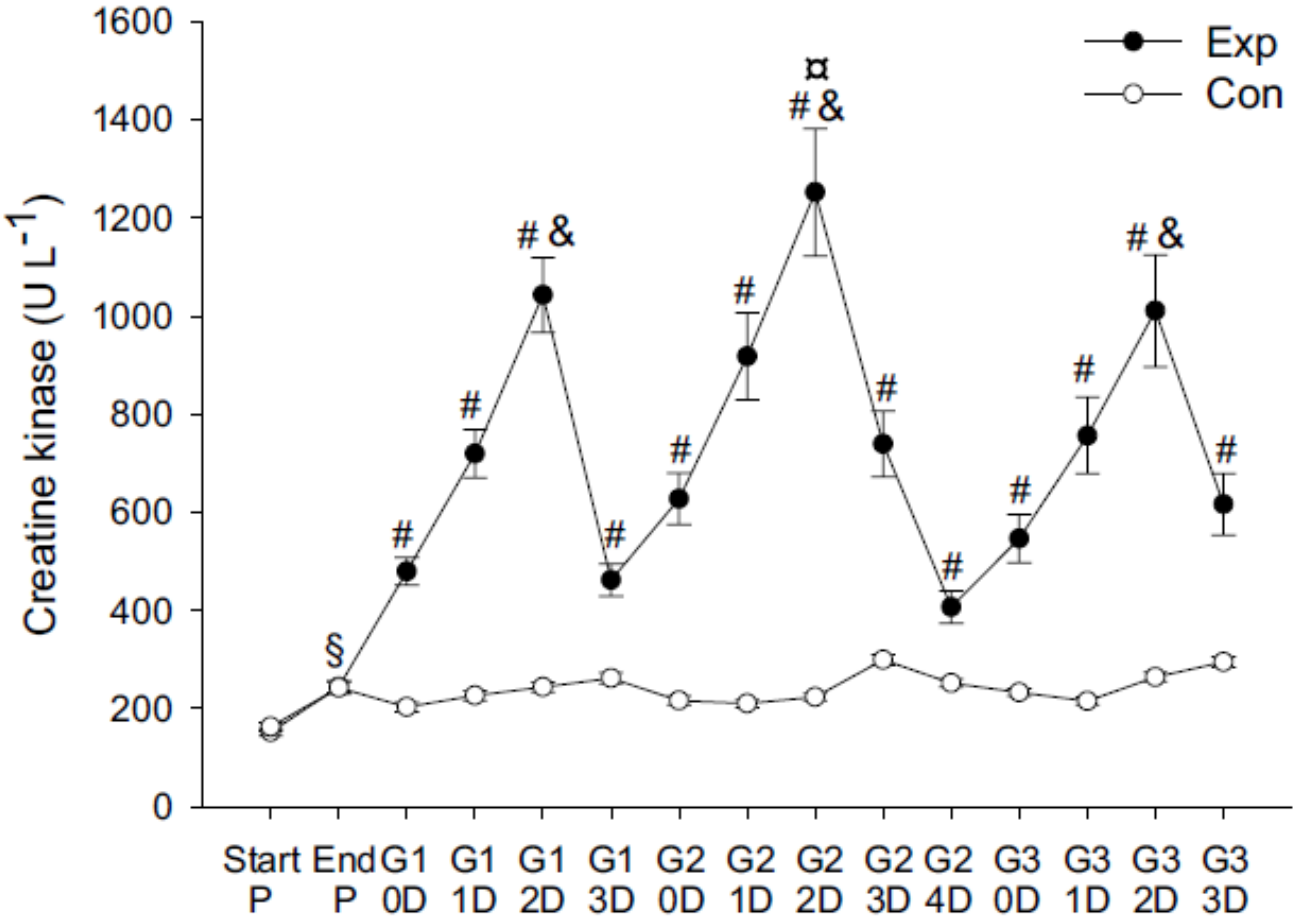

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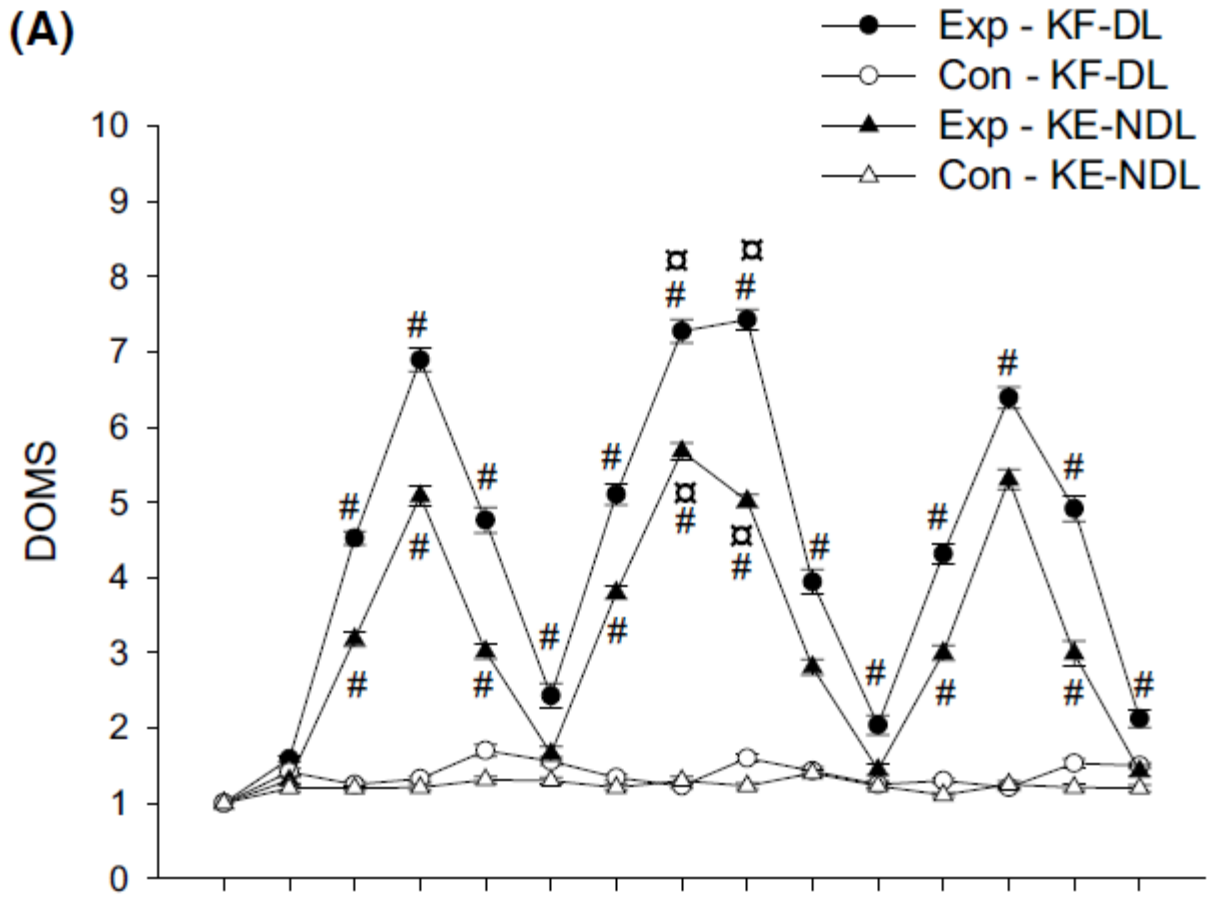
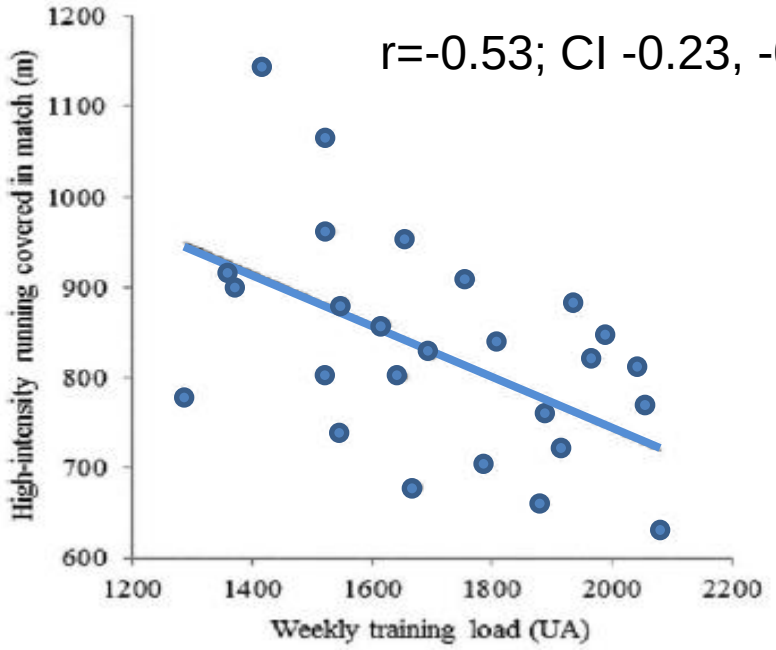
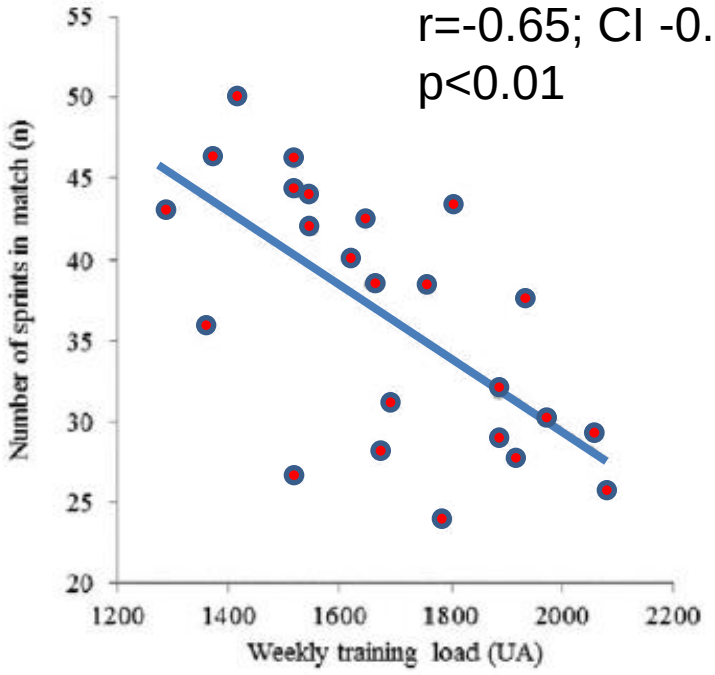


Tapering & Performance



r=-0.53; CI -0.23, -0.76; p<0.01



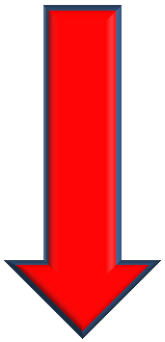
r=-0.65; CI -0.32, -0.84; p<0.01

Fessi et al 2016

Tapering & Performance

Take home message

- **- 25% Weekly TL**

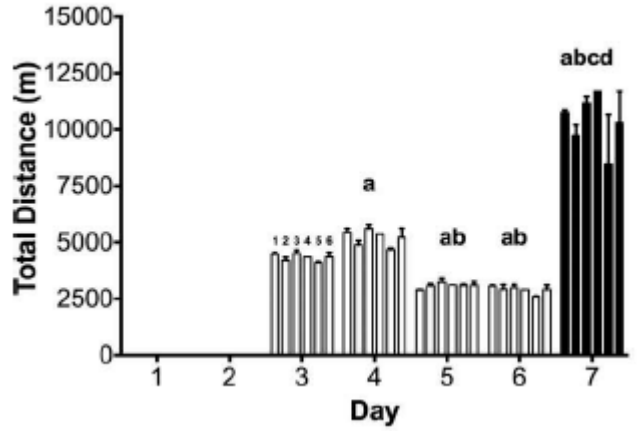


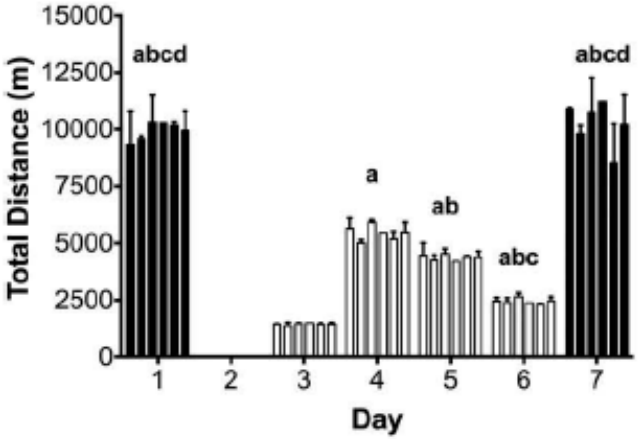
+ 15% Match HI

- **Reducing Volume (Duration and Frequency)**
- **Maintaining Intensity**

Fessi et al 2016

Weekly TL





Premier League

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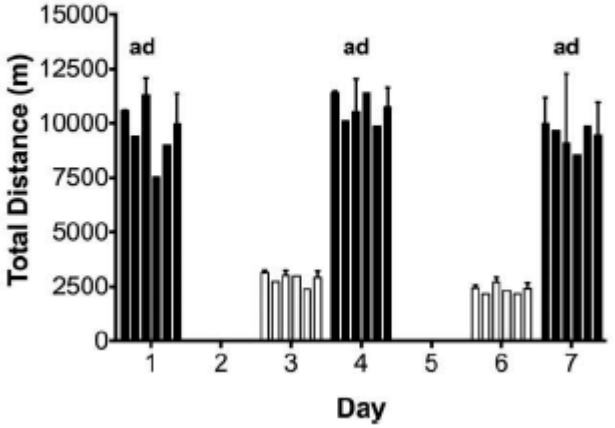
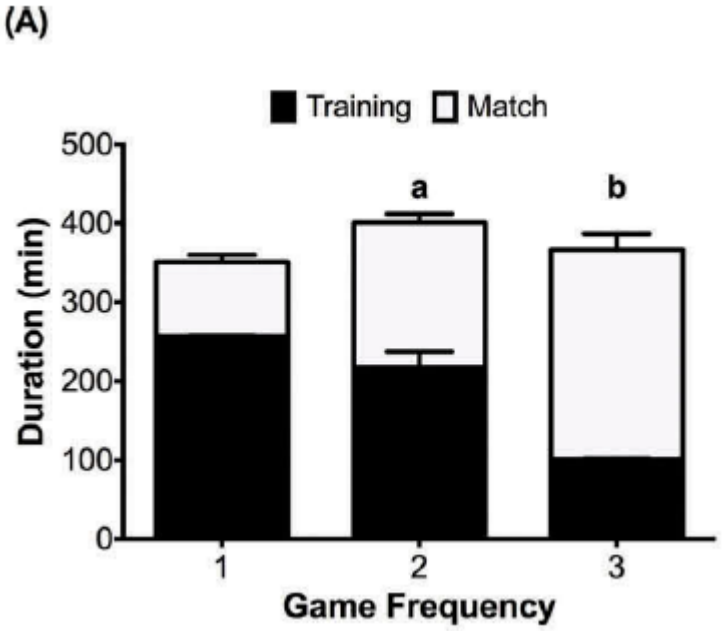
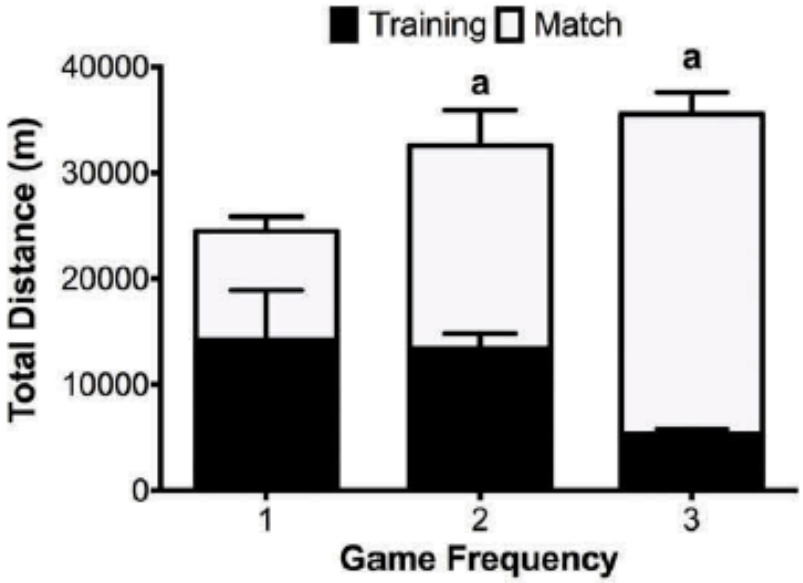


Anderson et al 2017

Weekly TL



Premier League



Anderson et al 2017

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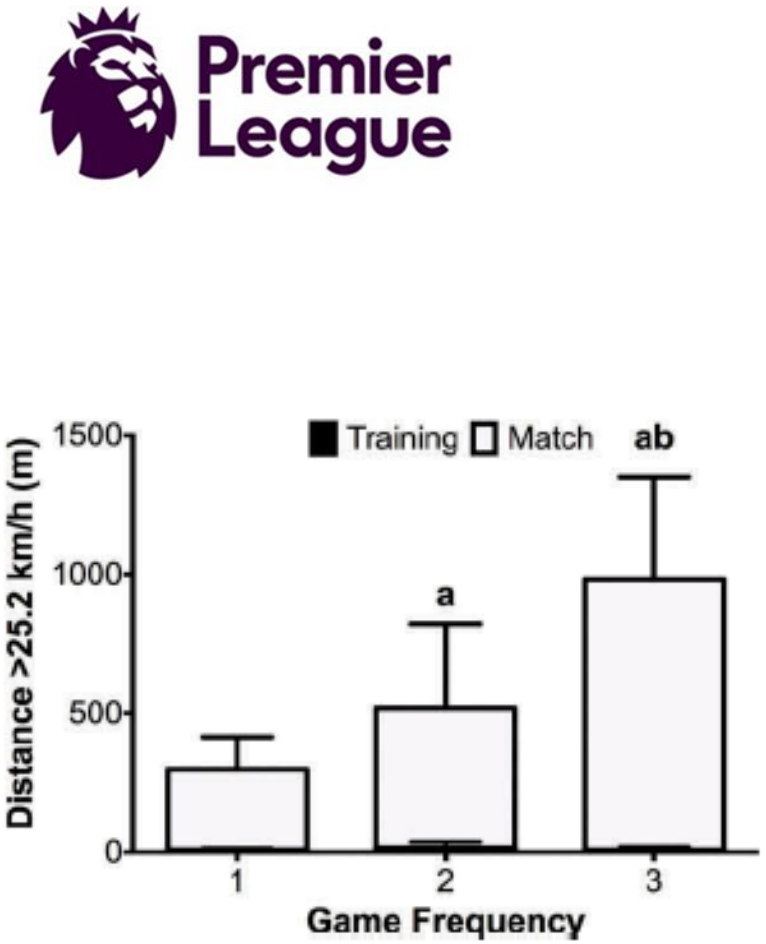
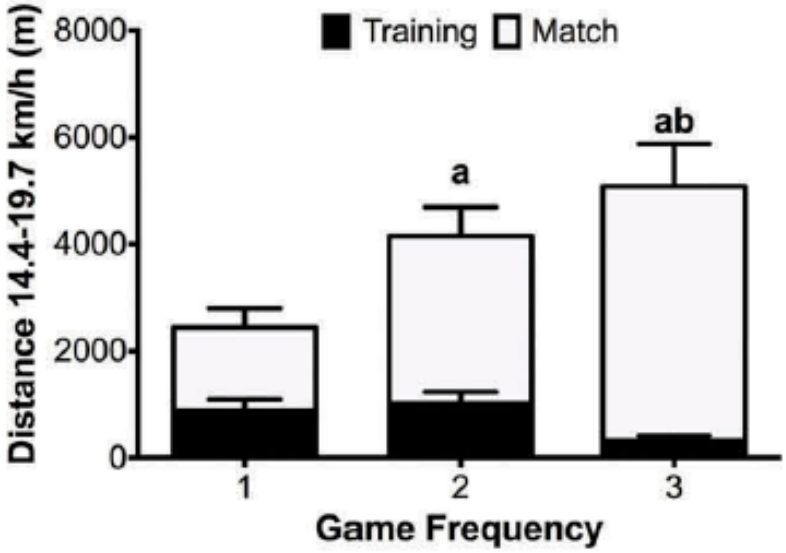
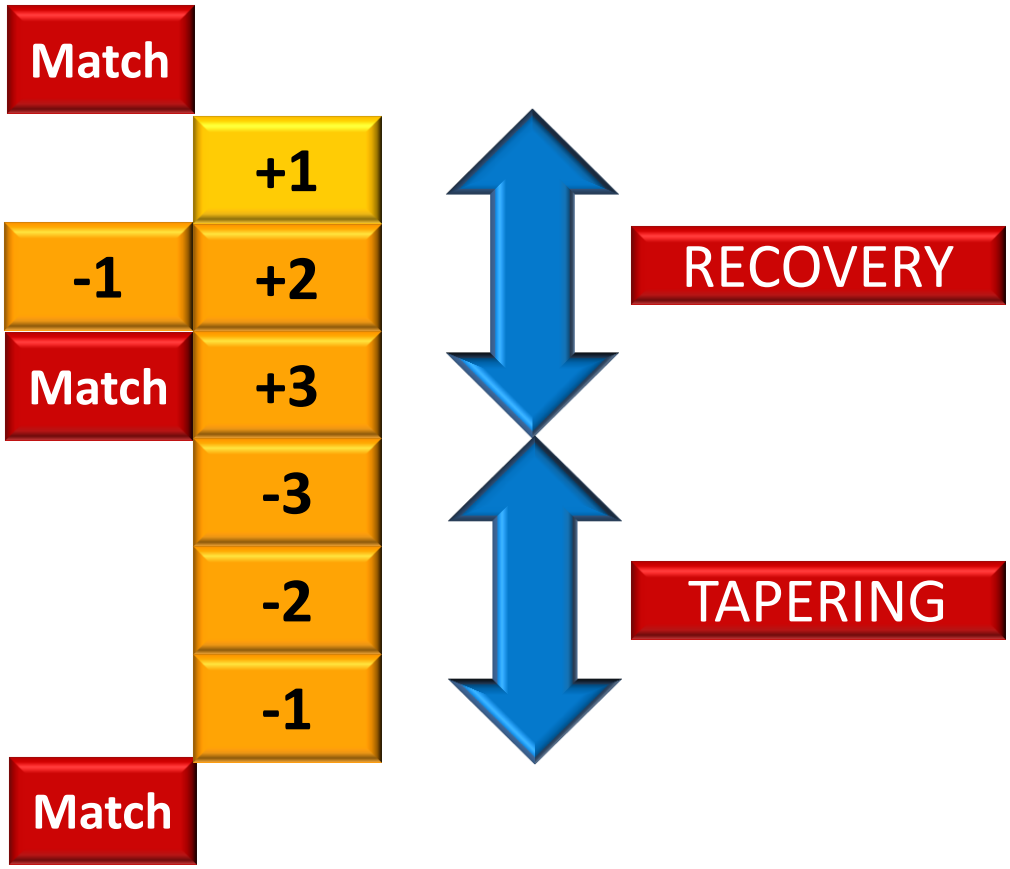
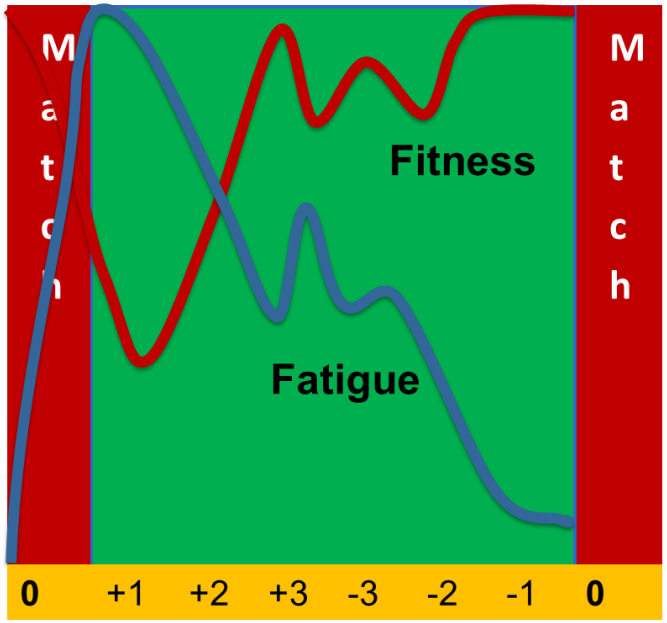




Anderson et al 2017

Weekly Periodisation

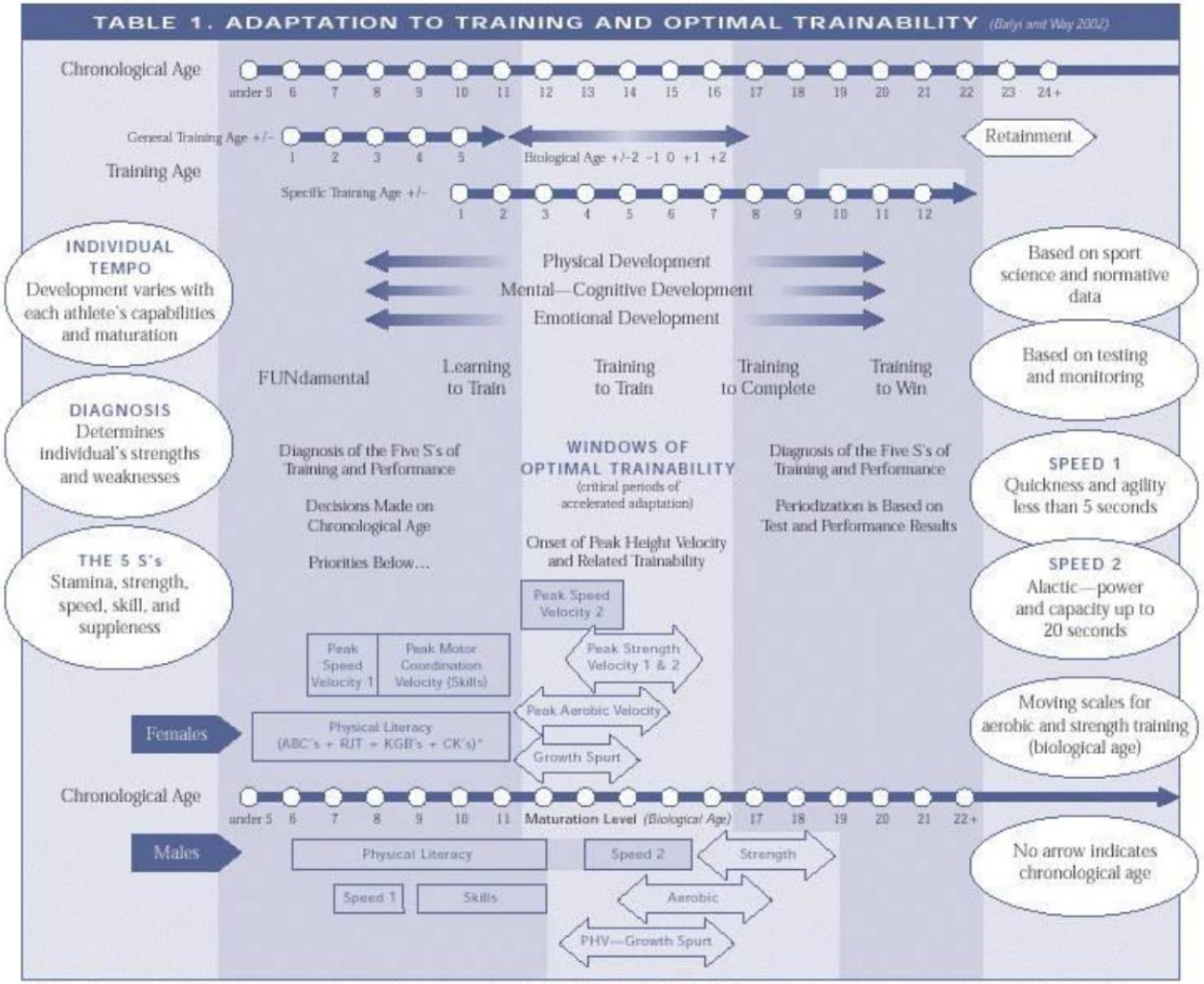




Youth Football

- Biological Maturation
- Physical Abilities Ontology
- Deliberate Practice
- Deliberate Practice

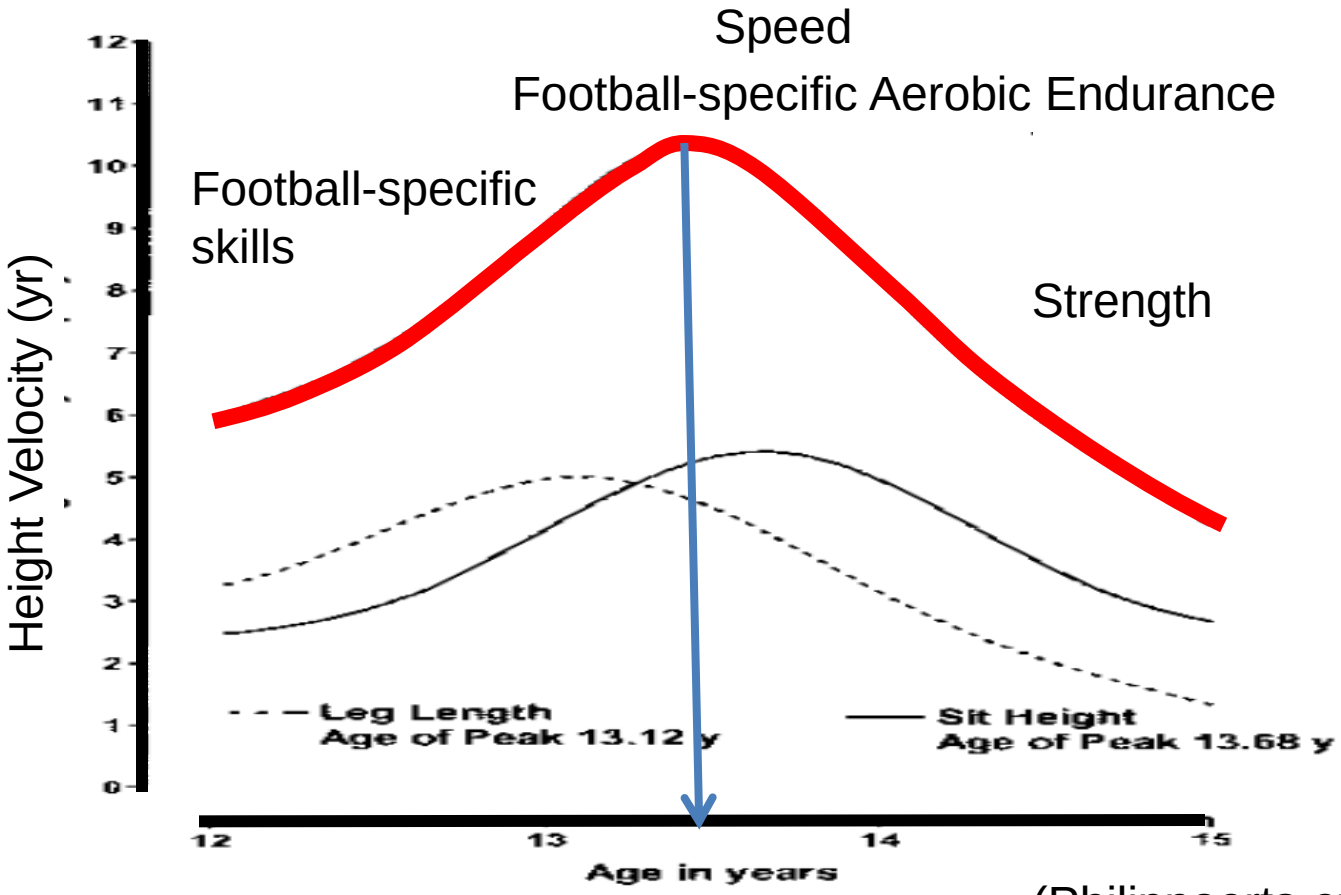
Long Term Player Development



*ABC's = Agility Balance Coordination Speed + RJT = Run Jump Throw + KGB's = Kinesthesia Gliding Bouyance Striking with objec + CK's = Catching Kicking Striking with body

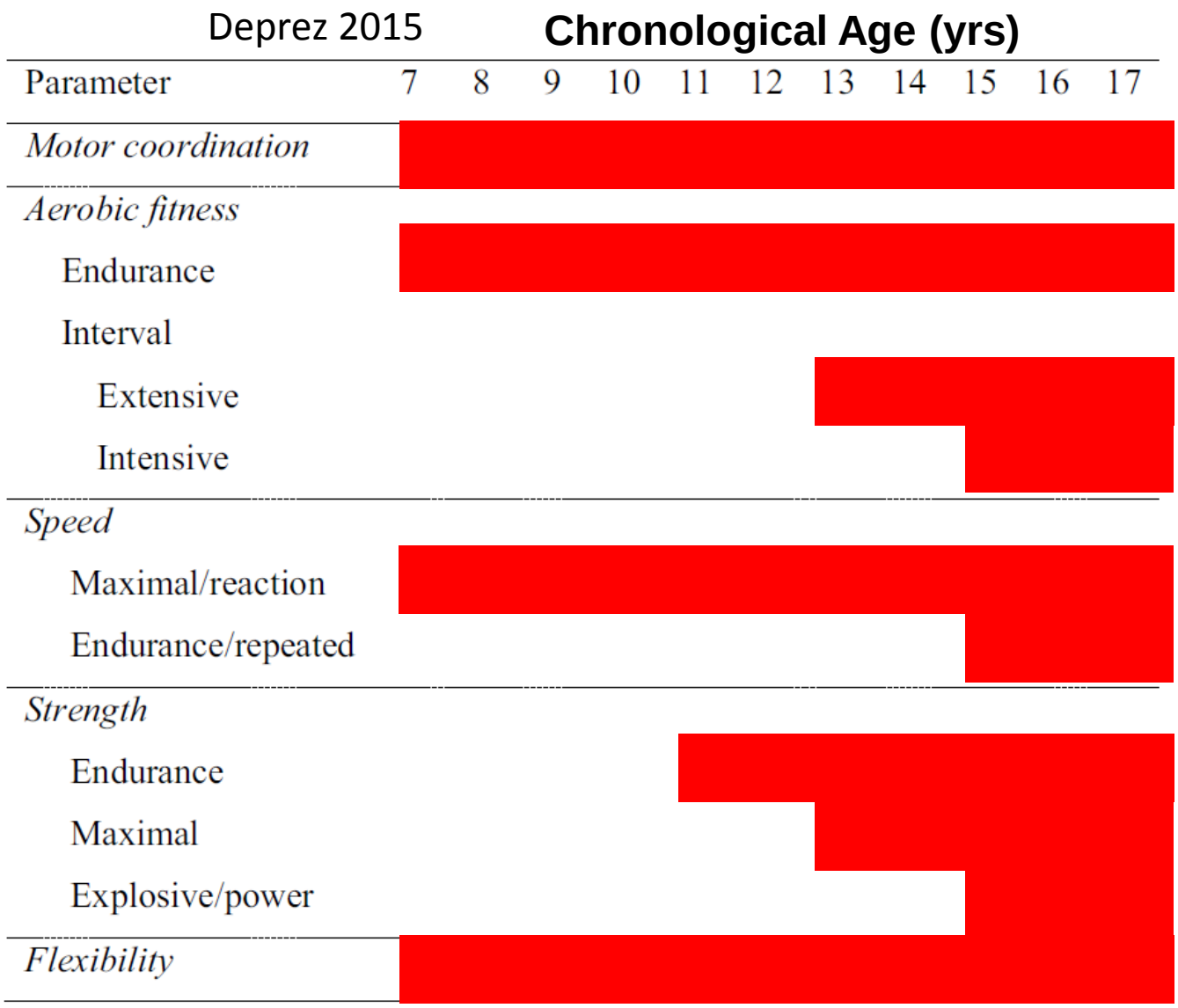
PHV test Performance

- **Sensitive periods?**



(Philippaerts et al., 2006).

Training Interventions



Window of Opporunities

Deprez 2015

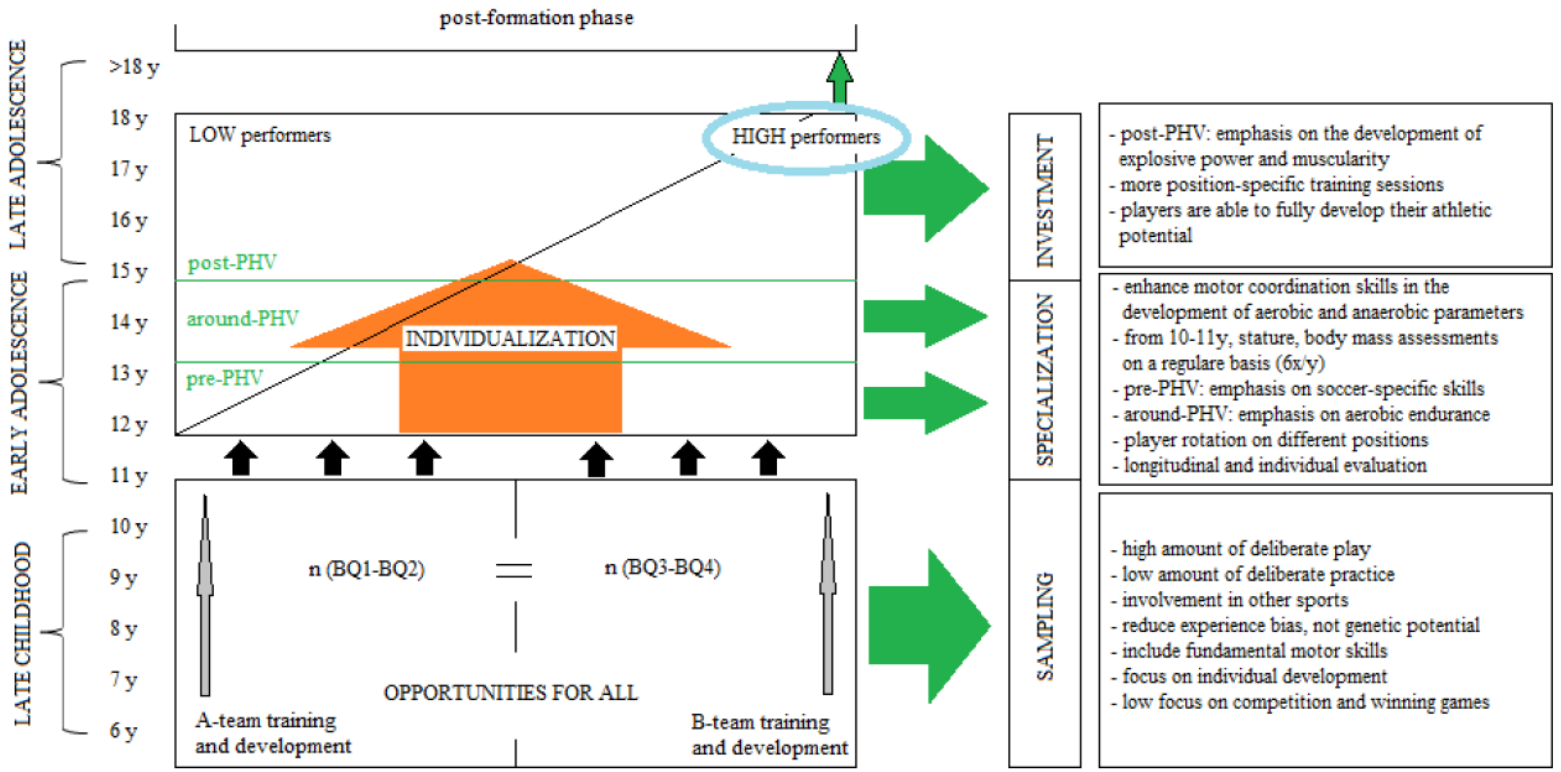


Figure 6 *Long-term model for physical and physiological development ("LPDM").*

Conclusions

- Fatigue Model
- Personalized Approach
- Flexible Approach
- Integrated Training
- Maximize Playing Performance

Planning in Football

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